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(56) Documents cited  
GB 2185937 A WO 91/06920 A WO 90/12371 A  
WO 82/03286 A US 4944021 A

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## (54) Integrated circuit card with fingerprint verification

(57) An integrated circuit or smart card stores encoded fingerprint data for verification purposes. The data is input into the card 9 using a biometric reader 1. At the point of use, a biometric reader (11, Fig. 2) interfaces with a card reader (13), the result of the comparison being displayed by printer (15).

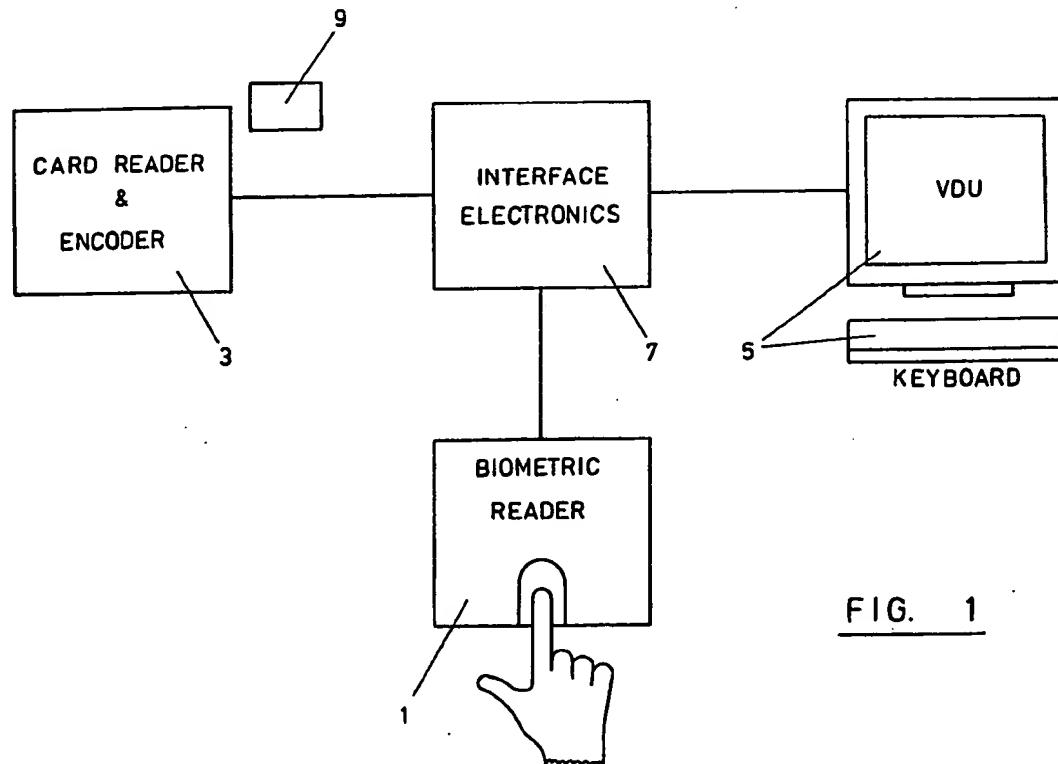


FIG. 1

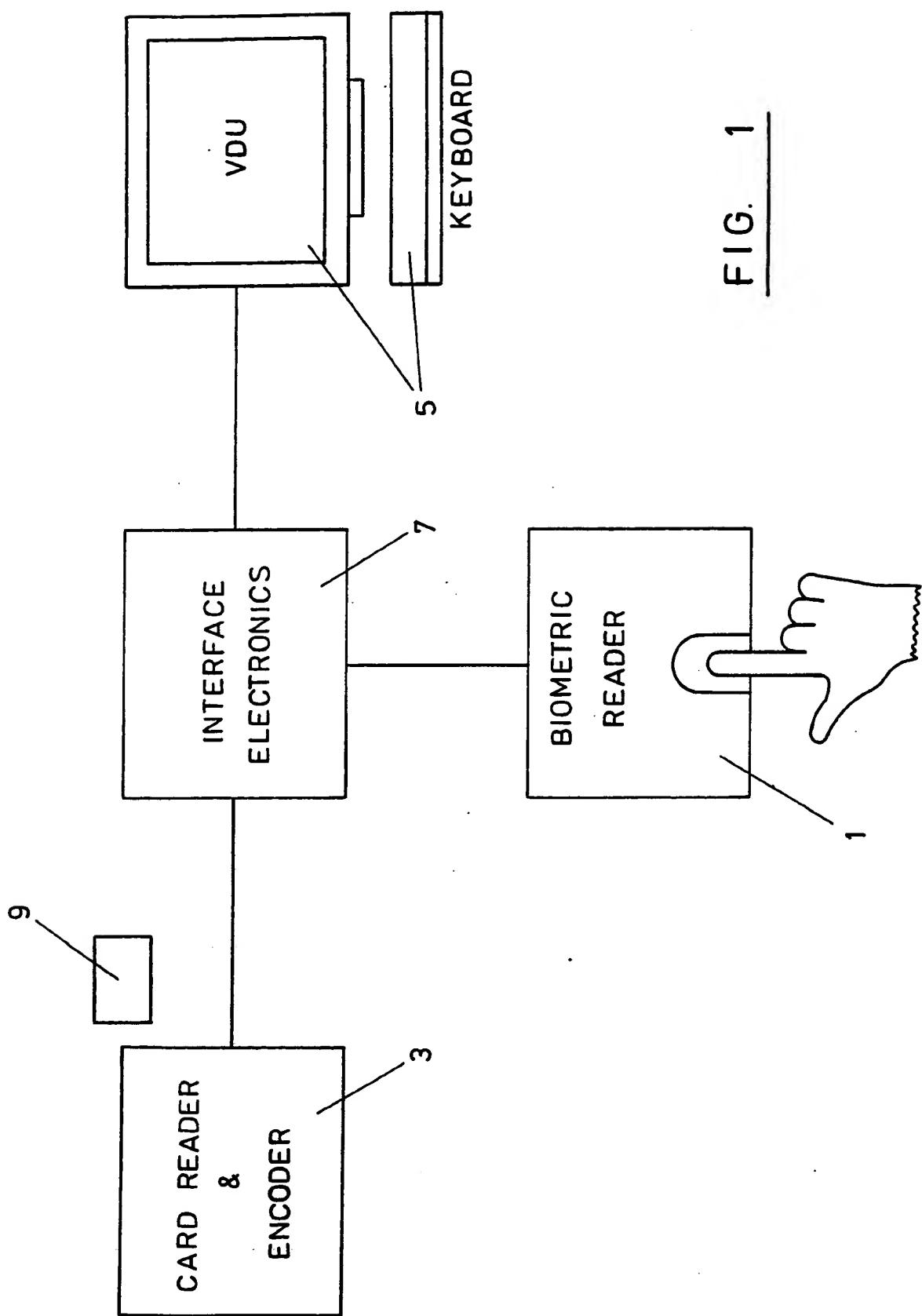
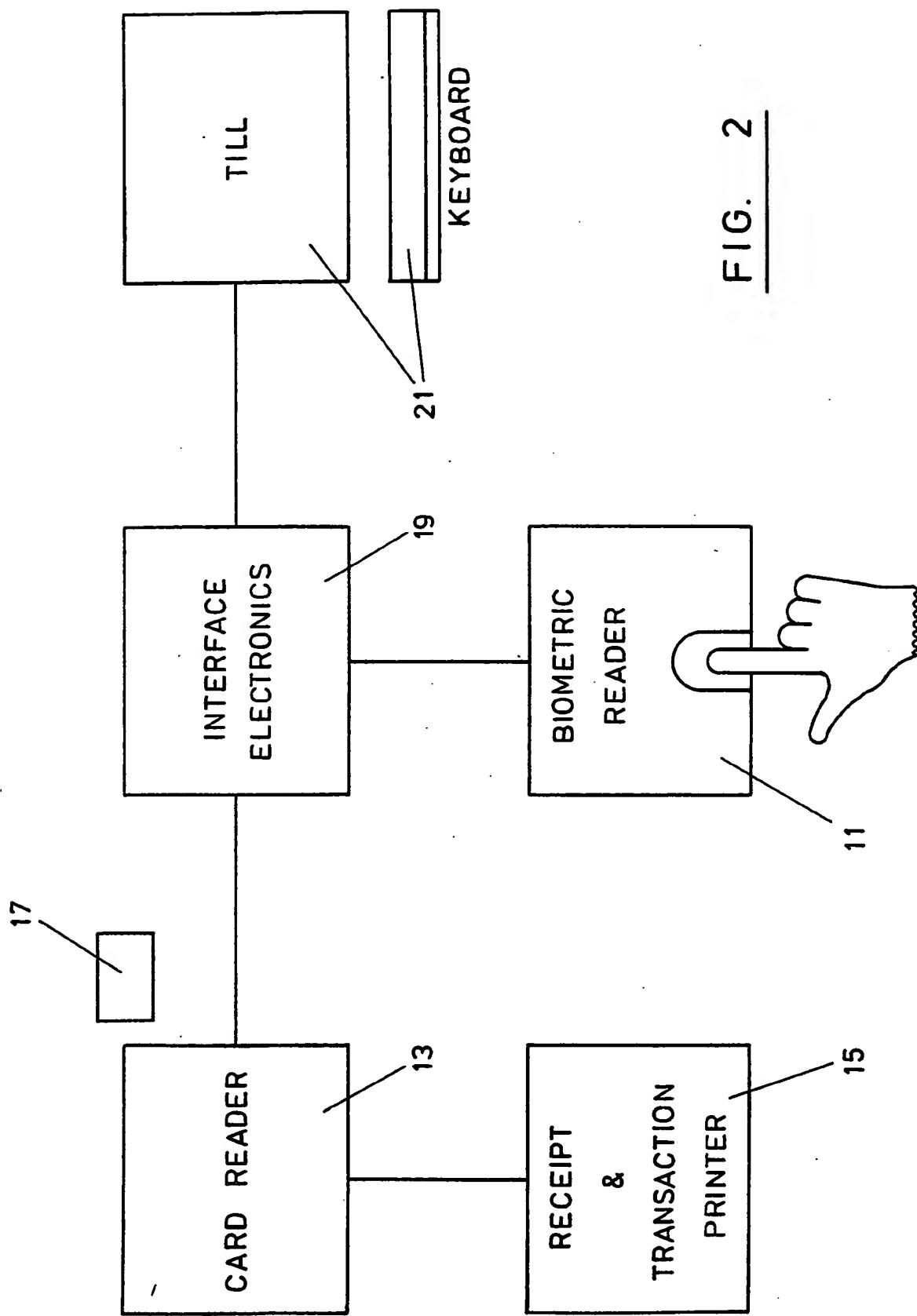


FIG. 1



ANTI-FRAUD IDENTIFICATION/PAYMENT CARD DEVICE

This invention relates to the prevention of fraud in the use of identification or payment cards, the term payment card including credit, debit and charge cards. For simplicity, reference will be made hereinafter to the term credit card  
5 although it should be understood that it includes all the above mentioned types of card.

An object of the invention is to reduce the incidence of credit card fraud in the particular case where a person other  
10 than the owner of the card has possession of it. It is frequently the case that such a person may attempt to obtain a financial or other advantage by presenting the card and, if necessary, reproducing the signature shown on the card.

- 15 According to the present invention there is provided a credit card which includes a device storing data characterising a fingerprint of the owner of the card, such a device being readable by appropriate data reading equipment.
- 20 The present invention also provides a method of preventing credit card fraud, the method comprising presenting the above defined card of the invention to a suitable data reading device, the apparent owner of the card then presenting a finger to fingerprint reading apparatus, which apparatus may  
25 be integral with the data reading device, the apparatus being arranged to compare the characteristics of the fingerprint with the data read from the credit card in order to verify that the possessor of the card is its rightful owner.
- 30 A credit card of the present invention may be the same as or similar to a so-called "smart" card which includes a data storage facility which may be wholly or partly loaded with data characterising a fingerprint.
- 35 An advantage of a device and method in accordance with the present invention is that there is no requirement for

sophisticated computer storage facilities, possibly remote from the apparatus at the point of use, nor to store details of fingerprints of all card holders. The fingerprint details are stored on the card itself and these are compared directly 5 at the point of use with the appropriate fingerprint of the possessor of the card.

The fingerprint data which is stored on the card is unique to the rightful card owner and it cannot be in any way forged or 10 tampered with. Utilisation is made of biometric techniques to analyse the card holder's fingerprint and to digitally encode unique aspects of this information onto the credit card. Up to a quarter of a million pieces of information may be analysed, digitised and converted to a unique mathematical 15 characterisation. This does not entail the recording of a full fingerprint. It is only necessary to record a selection of pieces of information sufficient to provide uniqueness. It is not possible to print out this data as hard copy. A feature of the method of the present invention is that the 20 data is not committed to any sort of computer memory or data base.

The present invention will now be described, by way of example only, with reference to the accompanying drawings in which:-  
25

Figure 1 shows diagrammatically the use of the present invention at the point of issue of the credit card; and

Figure 2 shows diagrammatically the use of the present 30 invention at the point of a sale.

Referring to Figure 1 of the accompanying drawings, a typical installation in, for instance, a bank or building society comprises a biometric reader 1 connected or interfaced to a 35 magnetic card reader/encoder 3 and a keyboard/VDU 5 by means of interface electronics 7.

The card holder is issued with a credit card 9 which is encoded with fingerprint data at the point of issue, the card

holder's fingerprint being read, as indicated in Figure 1, by means of the biometric reader 1. In other words the card holder presents himself at his local issuing branch whereupon the live data will be read into the system by placing the 5 forefinger onto the biometric reader 1. This data is automatically encoded onto the credit card 9 by the card encoder 3.

At the same time all other relevant data can be entered via 10 the keyboard 5 and encoded on the card in the same way. All encoded data is then verified and the card is issued.

Referring now to Figure 2 of the accompanying drawings, a typical point of sale system comprises a biometric reader 11 15 interfaced to an online card reader 13 and receipt and transaction printer 15, the latter providing written confirmation of an "accept" or "deny" as a result of the biometric comparison as well as that of the credibility of the transaction being performed.

20 The card holder is required to place his forefinger on the biometric reader 11 in order to obtain data from the live finger which can be compared automatically with the data read from the card 17 by the card reader 13. The equipment 25 includes interface electronics 19 which interfaces the above mentioned devices with cash till and keyboard 21.

The biometric reader 1 is arranged so that it will only read 30 a "live" finger which exhibits warmth and detectable blood pressure, detectors being fitted in the equipment for this purpose.

CLAIMS

1. A credit card which includes a device storing data characterising a fingerprint of the owner of the card, such a device being readable by appropriate data reading equipment.
2. A credit card according to claim 1, the credit card being in the form of a "smart" card.
- 10 3. A method of preventing credit card fraud, the method comprising presenting a credit card, as defined in claim 1 or claim 2, to a suitable data reading device, the apparent owner of the card then presenting a finger to fingerprint reading apparatus, the apparatus being arranged to compare the characteristics of the fingerprint with the data read from the credit card in order to verify that the possessor of the card is its rightful owner.
- 20 4. A method according to claim 3 in which the data reading device is integral with the fingerprint reading apparatus.
5. A method according to claim 3 or claim 4 in which use is made of biometric techniques to analyse the card holder's fingerprint in order to produce a card suitable for use in the method.
- 25 6. A credit card according to claim 1 and substantially as herein described.
- 30 7. A method according to claim 3 and substantially as described herein with reference to the accompanying drawings.

Patents Act 1977  
Examiner's report to the Comptroller under  
Section 17 (The Search Report)

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Relevant Technical fields	Search Examiner
(i) UK CI (Edition K ) B6A (AK)	G J W RUSSELL
5 G06K (ii) Int CI (Edition )	

Databases (see over)	Date of Search
(i) UK Patent Office  (ii) ONLINE DATABASES: WPI	28 JULY 1992

Documents considered relevant following a search in respect of claims 1-7

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2185937 A (O'SHEA) - see whole document	1 and 2
X	WO 91/06920 (TMS) - see page 36 line 33 - page 38 line 3	1-5
X	WO 90/12371 (PERSONNEL) - see page 1 lines 18-20	1-5
X	WO 82/03286 (LOFBERG) - see whole document	1 and 2
X	US 4944021 (NEC) - see column 6 lines 10-37	1-5

Category	Identity of document and relevant passages	Relevant to claim(s)

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